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PIPESTONE, MINNESOTA.

SOURCE OF NATURAL ICE SUPPLY CONTAMINATED.

Dr. H. M. Bracken, secretary of the Minnesota State Board of Health, reported March 15, 1914, as follows:

We were called upon to investigate the ice collected for use at a little city in the southwestern part of Minnesota—Pipestone. Investigation showed that the only near-by ice field for Pipestone is a pond in the course of a creek north of that city.

Dr. A. J. Chesley visited this ice field on March 7, 1914, and found that the sewage from the Indian school near Pipestone was discharged into this small pond. Fresh fecal masses were found at the outlet of the tile drain and there was no filtration between the sewer outlet and the pond. The pond is shallow and covers only a few acres. As a result the ice is not fit for use except for refrigeration.

COMMON SENSE IN PUBLIC-HEALTH ADMINISTRATION.¹

By W. C. RUCKER, Assistant Surgeon General, United States Public Health Service.

The amazing fact of epidemiology is its extreme simplicity. Once the causative organism of a disease is known, and the factors concerned in its dissemination have been determined, the measures to be taken to prevent or to eradicate the disease are relatively simple. It may be stated that the greater our ignorance concerning the cause and method of transmission of a disease, the more complicated are our theories as to its epidemiology. Conversely, once the principles which underly the causation and means of spread of a disease become known, we are amazed by the simplicity of the facts. This has produced a twofold action upon the public-health activities of the present day. In the first place, it has made it possible to reduce the incidence of certain communicable diseases with accuracy and precision. Secondly, it has led large numbers of zealous persons possessed of a few half understood facts to rush into public-health work in its administrative and legislative branches.

In its final analysis, epidemiology is an extremely practical science, and to the mind which has been prepared by proper study and training, it is marvelously easy of application. The technique of prophylactic and eradivative measures is, however, a highly specialized science, which can not be acquired by self-communion and the study of a few text books. The assurance with which the amateur epidemiologist will attack a problem of disease prevention or eradication does not seem in the least amazing to many who would recoil in horror from the thought of an attempted major surgical operation by a

¹ Read before the Chicago Medical Society, Feb. 25, 1914.

sanitarian. With the layman, the case is even worse, and here indeed a little knowledge is an extremely dangerous thing. The physician has a knowledge of the causal elements of disease, and he is also informed as to their means of spread, but he lacks the knowledge of the technique of the application of epidemiological principles. The layman either has none of these, or he has been placed in possession of a few bald facts, without that background of understanding which comes from study and experience.

Take for example the application of the principle that bubonic plague is a rodent disease. The layman may not understand that all that is necessary to control an outbreak or to prevent its recurrence is to thoroughly insulate man against rodents. The layman says: "Let us kill all the rats. We will offer a bounty of 50 cents for female rats and 25 cents for male rats." The epidemiologist says, "No. We will thoroughly rat-proof the habitations of man." Typhoid fever is transmitted by the ingestion of human excrement. The amateur sanitarian says, "We will pass a law forbidding the use of wells." The epidemiologist says, "Very well, but we will also enact laws to the end that sewage may be properly disposed of, the water supply improved, the breeding places of flies destroyed, and the food supplies protected from infection by chronic carriers."

Public-health administration, to be of practical value, must be conducted along logical lines. The prerequisite to a logical course of action is training and the knowledge which comes from it. We must, therefore, expect that until our public-health administrators are thoroughly trained men we can not look for a full measure of common sense in public-health administration. There is at the present time a gradually increasing demand for full-time health officers of proper qualifications, and an attempt is being made by the larger educational institutions to supply this demand by special courses leading to the diploma of public health. At the present time the salaries offered to such men are not commensurate with the time, labor, and expense which they are obliged to undergo in order to properly fit themselves for the discharge of such duties. The employment of incompetent health officers at a low salary is the worst kind of extravagance. Not only because there will not be a return in efficiency for the moneys so expended, but also because the untrained man will adopt a number of unnecessary and expensive measures which would be avoided by the professional epidemiologist who knows how to perform his duties with accuracy and without lost motion. The untrained health officer establishes a shotgun quarantine, burns tar barrels in the streets, and washes down the houses with bichloride of mercury to stop an outbreak of yellow fever, when the simple measure of *Stegomyia* destruction will accomplish the desired result.

It should be borne in mind that a wave of public-health enthusiasm is now sweeping over this country, and the American people are being awakened to the realization that we are making a wholly needless sacrifice to preventable disease. Whenever public sentiment is aroused in a particular direction, especially if it be with regard to a subject which requires scientific knowledge and training for proper comprehension, there is great danger that the movement may be characterized by fads and fanaticism. The medical profession of this country is very largely responsible for this sanitary awakening, and "the education of the general public" has become one of the slogans of the campaign. It should not be forgotten that you can not create a soldier by simply giving a man a rifle, and you can not make out of a layman a consistent sanitarian by presenting him with a few predigested facts. Let it be remembered that every action has an equal and opposite reaction, and unless we conduct this educational campaign with common sense and extreme care, the present enthusiasm will be succeeded by an apathetic reversion. Also, do not let us be charmed by the music of our own voices in this educational campaign. Shouting never won a football game, and the speaker sometimes mistakes his own enthusiasm for that of his hearers. The lay public has been wonderfully patient with us, and while it is extremely desirable that the purposes and aims of sanitation and hygiene should be brought before all citizens, we commit an incalculable error when we endeavor to make them into sanitarians. The best that we can hope will be to popularize the purposes of preventive medicine and to inculcate in the rising generation the principles and practices of personal hygiene. After the age of 25, toothbrush drill very seldom becomes a habit, and we must not expect any marked and widespread change in personal habits as affected by hygiene within the next 15 years.

Almost every time our lawmakers convene they are flooded by a mass of proposed legislation which is to right the sanitary wrongs of the municipality, the State, or the Nation, and unfortunately many of these find their way into the statute books. There is in this country a wealth of sanitary legislation which is impractical of administration and which lacks uniformity and logical basis. The epidemiologist whose business it is to study disease in the light of its prevention has long ago learned that one law in operation is worth ten unenforced laws on the statute books. More than this, an idle law casts discredit upon the legislators who begat it and the officials whose business it is to enforce it. It encourages a disregard for laws which it is desired to enforce, and therefore acts as a general hindrance. Many of the public-health activities in this country would be further advanced to-day were they not hampered by impractical laws passed by the overzealous. It must be admitted in all justice that the public-

health authorities have to a certain extent aided and abetted in the passage of these laws. The enthusiasm of which we have been speaking has led to the formation of a large number of societies having for their object the prosecution of some particular form of public-health activity. The honesty of purpose which has imbued these organizations is unquestioned, but it must be regretfully admitted that their enthusiasm is not always manifested wisely. Too frequently they have led the health officer instead of the health officer leading them, and this has been possible because the health officer has not always been sure in his own mind just what he wanted to do. After the enactment of the law the climax of enthusiasm has been reached, and as it wanes the health officer finds himself with a weapon in his hands which is so heavy that he can not possibly wield it.

A case in point is the present agitation over track pollution by interstate carriers. From an æsthetic point of view the practice is reprehensible, yet no one has brought forward indisputable evidence that disease is or may be generally spread in this way. Yet the literature on the subject is fairly full, and one author has made the statement that a typhoid carrier traveling from New York to San Francisco by train may infect every mile of roadbed between the two cities. Another writer claims that typhoid fever has a high incidence among traveling salesmen and track employees because they ingest excrement-infected dust. The matter has been carried even further and a bill introduced into one of the State legislatures in order to regulate track pollution. Stripped of its legal verbiage the bill provides that no railway company shall discharge or permit to be discharged from any car carrying passengers any solid or liquid human excreta, either directly or indirectly, within the bounds or on the boundary of any watershed used as a source of public water supply. It further requires that the company shall provide in each car two toilets of such form that they shall thoroughly retain all solid and liquid excreta in a watertight and odorless receptacle. Finally, it is provided that these receptacles shall be emptied, flushed, and thoroughly sterilized or disinfected at least once in every 12 hours of car service, whether in use or not.

Track pollution is undoubtedly a dangerous practice under certain circumstances, and watersheds should always be protected from pollution. The knowledge which we have at hand, however, does not indicate that all track pollution results in human disease. It certainly does not explain the necessity for sterilizing excrement containers which are not in use. What we require first is exact knowledge of the amount of disease spread by track pollution and the mechanism of such spread. Having that, it will be easy enough to legislate sensibly on the question and to put control measures

in operation. Premature legislation based on unsupported theories simply reacts to injure the public-health movement.

Two general sets of faults may be found in the sanitary laws of this country. The most common of these is a scatteration of ideas and the loading down of the health officer with more power than he could possibly use. This is just as great a fault as giving him too little power. Frequently a law errs in the opposite direction, and endeavors to be too specific, in which event it becomes the victim of legal quibbles which prove its utter undoing. Most of these laws have been drawn up by amateurs, and even the very wisest professional is sometimes hard put to it to draft a proper law. In this connection, it may be pointed out that the profession of law is becoming highly specialized. We have corporation lawyers for the mining industry, the banking industry, and for the various other classes of corporations. As a matter of fact, there is a specialty for every kind of law from crime to real estate, excepting sanitary law, and there is great need, indeed, for men who can combine with a knowledge of the law a knowledge of the fundamentals of epidemiology.

Too frequently the State or municipality will enact laws giving to the health officer broad powers to adopt any and all measures for the prevention of the spread of disease, and will appropriate, let us say, \$1,800 for clerk hire, office rent, and the other purposes of the act. It would be a very good thing if we could have a commission for the determination of sanitary valuation and standardization in order that public-health work might receive the financial support which is essential to efficient administration. Unfortunately, the relation between sanitary authority and sanitary appropriations has never been worked out in a practical way, practical, that is, from the layman's point of view.

It is not the purpose of this paper to be iconoclastic or pessimistic, neither is the value of the lay cooperative effort underestimated. It is a good thing for the sanitary workers of this country to have the help and the council of the medical profession and the general public. Their watchful eyes may observe administrative errors and instances of effort gone astray. Their praise and their criticism are of equal value—the one acting as a stimulus to better work and the other as a spur to more efficient effort. But the amateur sanitarian should be controlled and directed and the principles of epidemiological practice applied with precision. We should not continue to cling to the practices of yesterday merely because of precedent, but should take stock of ourselves and ask whether the measures which we are now using in our endeavors to control and prevent disease have an actual basis of fact.

Formerly a vessel from a cholera-infected port was subjected to rigid quarantine. The passengers and crew were held during the incubation period. The ship was disinfected from stem to stern and from truck to keelson. The freight was exposed to antiseptic gases which did not penetrate its interior, and it is extremely doubtful if very much was accomplished by these measures toward the prevention of the introduction of cholera. To-day a bacteriological search is made for carriers, and if none are found the vessel is allowed to proceed. Disinfection is not performed unless there is actual reason for so doing, and then with the accuracy of a rifle rather than by the methods of a blunderbuss.

We must be careful in our public-health work that we do not advocate the adoption of a certain measure merely because it may control some remote source of danger. It is entirely proper that we insist upon the abolition of the common drinking cup, both as a prophylactic and an educational measure; but when we insist that cups furnished to the general public shall be sterilized the question has assumed a phase as farcical and ridiculous as would be the individual door knob. Already a good many common-sense laymen are offering the criticism that we are carrying public health measures to an unnecessarily fine point of perfection. While this contention is not granted, it must be admitted that some of the recommendations which are being made by untrained enthusiasts bear a close resemblance to the Royal Society's recommendations with regard to bathing. These, when reduced to their lowest terms, are "Do not bathe."

The general public is fundamentally practical, and it is not enough that we be able to show that the funds which it has given for the prosecution of public-health work have resulted in the saving of human lives. This is all very well, but the hard-headed business man is interested in the other returns from his public-health investment. "Where the treasure is, there is the heart also." We must show in actual figures that public health is public wealth if we are to secure funds for the conduct of research or the prophylaxis of disease. Furthermore, no matter how high our ideals may be as to the humanitarian aspects of our profession, we must administer the public-health activities with due regard for commerce. Compare, for example, the disastrous effects produced upon trade intercourse by the prohibitive quarantines of the past with the way in which Federal quarantines are administered to-day. Formerly nonintercourse was the principle. To-day it is the maximum of protection with the minimum interference with trade.

The arbitrary enforcement of the exact letter of the law instead of applying it with common sense to meet the situation defeats the purposes for which the law was created. It discourages cooperative effort and sometimes works hardships which might have been avoided

by a more elastic construction. Sanitary government is by the consent of the governed. In dealing with problems which affect social and industrial life, the epidemiologist must be possessed of breadth of vision, charity, and understanding, if he would lead his people into the paths of sanitary righteousness. Arbitrary house quarantine has brought about a reluctance to report communicable diseases and a disregard for quarantine that could have been avoided, in part at least, by the application of a little common sense and charity. The stiff-necked insistence on the letter of the law, which isolates the bread winner and separates mother and child, kills at a single blow the co-operation which has been developed by years of patient effort.

Consider the untold sums which have been expended in the past in disinfecting places in which infection did not exist, to the utter disregard of the living carriers of the seeds of disease. We smile at the reports of washing walls with antiseptics to the height of 3 feet for the purpose of killing the miasms of plague, but is it any more ridiculous than surface disinfection as carried on by so many of the public health agencies of to-day? Yet we continue, year after year, to burn incense to the unknown gods of disease, and at the expense of the taxpayer, whom we are endeavoring to evolve into a sanitarian.

Common sense in public health administration comprehends the employment of well trained, full time health officers, at adequate salaries, the appropriation of sufficient funds to enable such an official to administer the laws, and the enactment of specific legislation having as its foundation the basis of fact and practicality.

The medical profession as the leader in the campaign of sanitary renaissance must be guided by conservatism. The measures which we recommend must be practical. Fact, not theory, must be the basis of our action. Disease is not a ghost, but a reality. The common-sense application of knowledge alone will control it. Epidemiology is that knowledge. It can be put into force by persons trained in that science, provided they have funds and authority. The sanitary millenium will never come, but research and common-sense administration will bring it nearer.

SALT-WATER SWIMMING BATHS.

EFFECT OF CHLORINE TREATMENT ON THE BACTERIAL CONTENT.

By WILFRED H. KELLOGG, Director of Laboratories, Department of Public Health, San Francisco, Cal.

The attention of the health department of San Francisco having been directed to swimming baths by inquiries on the part of the public and rumors that physicians had stated that people were contracting skin diseases and inflammations of the eye by bathing in